Atty. Dkt. No. 046585/0118

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Jed W. FAHEY et al.

Title: CANCER CHEMOPROTECTIVE FOOD PRODUCTS

Appl. No.: 09/118,867

Filing Date: 7/20/1998

Examiner: K. Hendricks

Art Unit: 1761

Batch No.: R47

TRANSMITTAL OF FORMAL DRAWINGS

Commissioner for Patents
Washington, D.C. 20231

ATTENTION: DRAWING REVIEW BRANCH

Sir:

Transmitted herewith are the formal drawings (2 sheets, Figures 1-2B) for the above-identified application. The Official Draftsperson is respectfully requested to approve these drawings for entry into the application.

Respectfully submitted,

Date October 6, 2000

By _____

Richard C. Peet
Attorney for Applicant
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002.396639.1

Exhibit 3-E

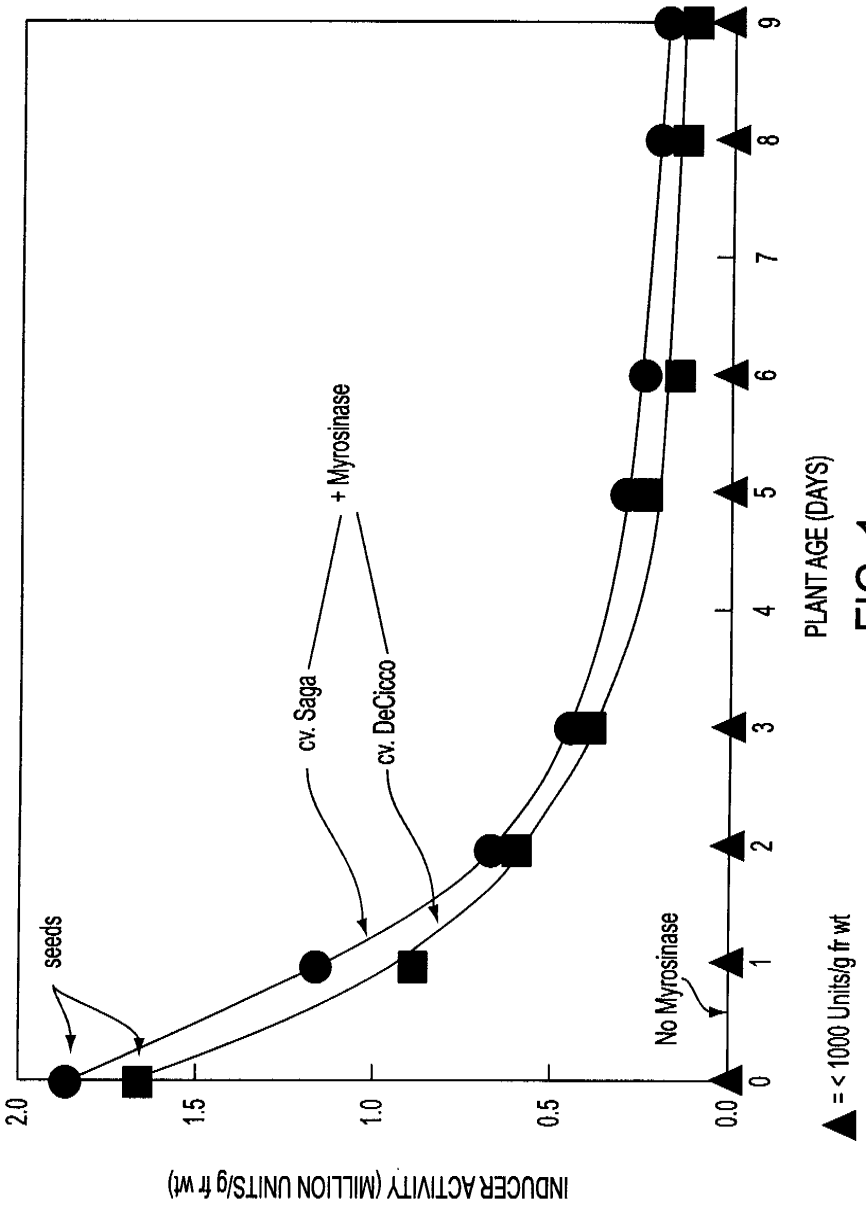
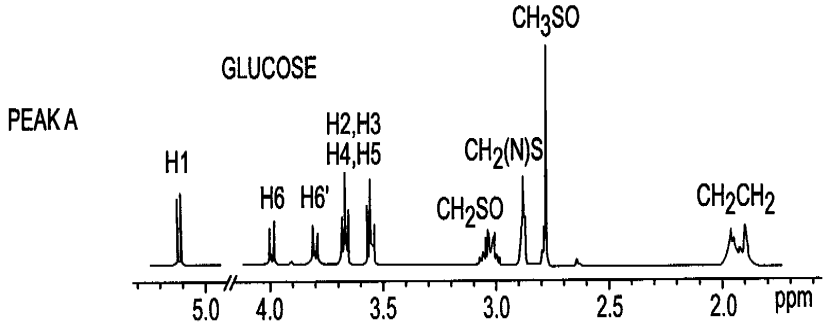

INDUCER ACTIVITY (MILLION UNITS/g fr wt)
2.0
1.5
1.0
0.5
0.0
seeds
cv. Saga
cv. DeCicco
+ Myrosinase
No Myrosinase
0
1
2
3
4
5
6
7
8
9
PLANT AGE (DAYS)
▲ = < 1000 Units/g fr wt

FIG. 1


PEAK A
GLUCOSE
H1
H6
H6'
H2,H3
H4,H5
CH2SO
CH2(N)S
CH3SO
CH2CH2
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4.0
3.5
3.0
2.5
2.0
ppm

FIG. 2A

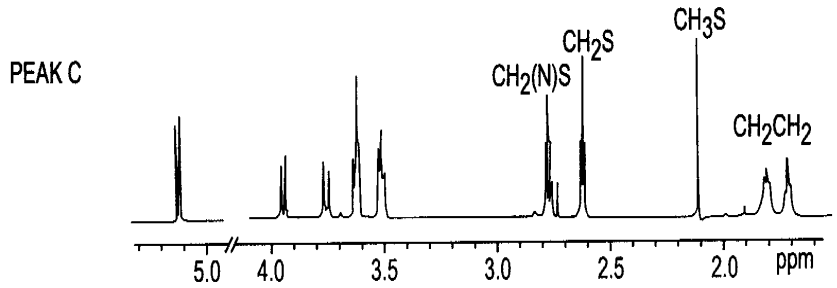
PEAK C
CH2(N)S
CH2S
CH3S
CH2CH2
5.0
4.0
3.5
3.0
2.5
2.0
ppm

FIG. 2B

PART B—ISSUE FEE TRANSMITTAL

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FOLEY & LARDNER
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(Date)

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
09/118,867	07/20/98	033	HENDRICKS, K 1761	08/29/00

First Named Applicant: FAHEY, — 35 USC 154(b) term ext. = 0 Days.

TITLE OF INVENTION: CANCER CHEMOPROTECTIVE FOOD PRODUCTS

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
1 0465585/0118	426-629.000	R47	UTILITY	YES	~~$585.00~~ 1,240.00	11/29/00

1. Change of correspondence address or indication of " Fee Address" (37 CFR 1.363). Use of PTO form(s) and Customer Number are recommended, but not required.

[ ] Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

[ ] "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47) attached.

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3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
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(A) NAME OF ASSIGNEE
JOHNS HOPKINS SCHOOL OF MEDICINE

(B) RESIDENCE: (CITY & STATE OR COUNTRY)
Baltimore, MD

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The COMMISSIONER OF PATENTS AND TRADEMARKS IS requested to apply the Issue Fee to the application identified above.

(Authorized Signature) Richard C Peet
Richard C. Peet, Reg. No. 35,792

(Date) Oct. 6, 2000

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10/10/2000 SDENBOB2 00000096 09118867
01 FC:142 1240.00 OP

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Andi Isla.

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 1997

Application or Docket Number

CLAIMS AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY TYPE ☐/ RATE	FEE	OR	OTHER THAN SMALL ENTITY RATE	FEE
BASIC FEE				395.00	OR		790.00
TOTAL CLAIMS	21 minus 20 =	* 1	x$11=	11	OR	x$22=	
INDEPENDENT CLAIMS	3 minus 3 =	*	x41=		OR	x82=	
MULTIPLE DEPENDENT CLAIM PRESENT			+135=		OR	+270=	
			TOTAL	406	OR	TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY RATE	ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	ADDITIONAL FEE
x$11=		OR	x$22=	
x41=		OR	x82=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
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Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
x$11=		OR	x$22=	
x41=		OR	x82=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C

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Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
x$11=		OR	x$22=	
x41=		OR	x82=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
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B1

SPROUTS

To Grow and Eat

Esther Munroe

THE STEPHEN GREENE PRESS
BRATTLEBORO, VERMONT

PUBLISHED DECEMBER 1974
Second printing December 1977—20,000 books in print

This book has been produced in the United States of America. It is composed by Priscilla Richardson and is published by The Stephen Greene Press, Brattleboro, Vermont, 05301.

The photographs for this book are by Allan Seymour.

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Includes index.
1. Cookery (Sprouts) I. Title.
TX801.M87 641.6'3 74-23609
ISBN 0-8289-0226-7

Contents

present population exchanged one-third of its meat product intake for seeds.

As the world's population increases, the need for more foodstuffs also increases. To help meet this problem, it is already apparent to many authorities that more seeds will have to be used in some form for human food. Since 3000 B.C. the Chinese have recognized that sprouted seeds provide greater nutrition than just seeds alone. Sprouted rice, bean and pea seeds have played an important role in the Chinese diet. Several centuries ago the Russians started adding sprouted wheat to their black bread, recognizing that this gave them greatly increased nutrition, particularly, as we now know, Vitamin C.

Nutritional Advantages

It is really only in the past thirty years that we here in the Western hemisphere have become interested in sprouts and sprouting. During World War II considerable interest in sprouts was sparked in the United States by an article written by Dr. Clive M. McKay, Professor of Nutrition at Cornell University. Dr. McKay led off with this dramatic announcement: "Wanted! A vegetable that will grow in any climate, will rival meat in nutritive value, will mature in 3 to 5 days, may be planted any day of the year, will require neither soil nor sunshine, will rival tomatoes in Vitamin C, will be free of waste in preparation and can be cooked with as little fuel and as quickly as a . . . chop."

Dr. McKay was talking about soybean sprouts. He and a team of nutritionists had spent years researching the amazing properties of sprouted soybeans. They and other researchers at the universities of Pennsylvania and Minnesota, Yale and McGill have found that sprouts retain the B-complex vitamins present in the original seed, and show a big jump in Vitamin A and an almost unbelievable amount of Vitamin C over that present in unsprouted seeds. While some nutritionists point out that this high vitamin content is gained at the expense of some protein loss, the figures are impressive: an average 300 percent increase in Vitamin A and a 500 to 600 percent increase in Vitamin C. As a result, one-half cup of almost any sprouted seed provides as much Vitamin C as six glasses of orange juice. In addition, in the sprouting process starches are converted to simple sugars, thus making sprouts easily digested.

Other Advantages

There are many advantages beyond the nutritional advantages to be gained from using sprouts in the family diet.

Sprouts can be grown just about anywhere. All that is required are seeds, very simple equipment and small amounts of water.

The yield of sprouts to original seed is about 4 to 1; for example, 1 cup of wheat will make about 1 quart of wheat sprouts. This makes storage of enough seed for a large and varied sprout harvest possible in limited space.

Sprouts can be used in place of, or in conjunction with, other fresh vegetables, thus providing appetizing top-quality, garden-fresh vegetables when the market variety are either inferior in quality or very expensive. It should be pointed out that seeds for sprouting are not cheap (*they must be untreated by the various chemicals that many seed producers use and certified edible*); yet no foodstuff is cheap any longer and the cost of seeds for sprouting is still very low in relation to the edible yield.

Not the least of the advantages to incorporating sprouts in the diet is that they add a wonderful variety of textures and flavors.

Warning—only chemically untreated and certified edible seeds should be used for sprouting.

The Wonderful Variety

Most people are familiar with the mung bean sprouts that are used in Chinese food, but many have never heard about sprouting any other kind of seed. They ask, "Do they all taste alike?" The answer is that they don't taste any more alike than the different plants from which they derive.

Seeds from almost every vegetable commonly grown in North America can be sprouted and used for human food with great nutritional advantage. There are two common vegetables that do not produce edible sprouts: *tomato and potato sprouts are highly poisonous and should never be eaten.*

Wheat and rice sprouts have a sweet nut-like flavor; alfalfa, rye and clover sprouts have a fresh-green taste not unlike that of other salad greens; radish and mustard sprouts are somewhat peppery and should be used in conjunction with more bland foods; sprouts from seeds of the cabbage family–broccoli, Brussels sprouts, cauliflower and cabbage itself–taste rather like the parent plants; sprouts from each one of the many kinds of peas, beans and lentils have their own distinctive tastes and are particularly versatile in cooking.

For greatest food value, all of the edible sprouts may be eaten raw. All may also be cooked in many different ways, which are covered in the recipe section of this book. If sprouts are new to you and your family, it is suggested that you try several different kinds, both raw and cooked. You are certain to find some, and perhaps many, that you enjoy.

Anyone who likes vegetables–either raw or cooked–will find a whole new world of taste treats in sprouts. If you are careful not to mention the "this is good for you" aspect, most children will also like many sprouts.

Warning–only chemically untreated and certified edible seeds should be used for sprouting.

Getting Your Seeds

As mentioned earlier and as most home gardeners are already well aware, by far and away the largest percentage of seeds sold for planting have been treated with some chemical or other–the list is long and constantly changing. These chemicals are chiefly pesticides used to protect the seeds from various infestations. However, in some cases, for instance alfalfa and red clover, methyl dyes are used to indicate foreign origin. The latter, and many of the former, are highly toxic to human beings and, to make matters worse, accurate warnings are not always required to appear on the packaging. As a result, for safety's sake, *sprouts from seeds that have been treated with any chemical whatsoever have to be considered not fit for human consumption.*

One way to get seeds for sprouting is through the mail. A number of mail-order seed companies do sell a selection of untreated seeds. At the end of this book there is a partial list of such suppliers. However, to be on the safe side, always specify when ordering that you want only untreated seeds–seeds completely free of chemicals, and certified edible. And be sure to double check when your seeds arrive. This is more than worth the little effort involved.

Since more people have become interested in natural and/or untreated foods, many health food stores have begun to stock untreated seeds that are suitable for sprouting. If there is no natural food store available in your area, you may wish to consult the list of suppliers at the back of the book for the names of health food supply houses from whom you can order by mail. Once again, be sure to specify that you want untreated, edible seeds suitable for sprouting.

Most stores that specialize in Oriental foods also sell seeds for sprouting–particularly mung bean and soybeans, both of which are widely used in Far Eastern dishes.

In addition, many chain stores and supermarkets, as well as the corner market, sell brown rice, whole peas, beans and lentils of various kinds that are perfectly safe for sprouting. These seeds can sometimes be used successfully, although they are often not as satisfactory as those intended primarily for sprouting. They may well contain among them cracked or broken or too-old seeds that will not sprout. However, it is worth a try, especially if you can find a small store that doesn't treat its stock too roughly.

Anyone who lives in a rural area may be able to get some untreated seeds from the local grain dealer. Here again it is essential to be sure that the seeds are suitable for *human* consumption.

For the home gardener there is yet another alternative. Even though you cannot eat treated seeds, it is possible to plant those seeds to grow a crop of your own seeds that are safe to eat. Just select a few plants that seem particularly suitable and allow them to go to seed. Use no chemicals on the plants. Pick the seeds when they are fully mature, dry them completely and store in closed containers in a cool, dry, dark place. You then have your own untreated, fully wholesome seeds for sprouting—at almost no cost.

Warning—only chemically untreated and certified edible seeds should be used for sprouting.

Which Sprouts for What

Before going into the particulars about each sprout, there are a few generalities to bear in mind. Sprouts are always tastiest when young and fresh (in fact, they should rarely be allowed to reach over 1 inch in length). So it is best to sprout only a limited number of each variety at a time and to try to plan to have one crop eaten before the next harvest is ready.

Following is an alphabetical listing of the most commonly sprouted seeds, offering in a nutshell the specifics of recommended sprout length and sprouting time, plus general suggestions for use, for each sprout. Also see the "quick reference" table placed for convenience just before the recipe section. This table gives seed quantities and their expected sprout yield, plus handy information on growing and cooking (if any) times.

Once again, it is important to remember that the sprouting times given here are average times and may vary with the age of the seed, its moisture content and with the humidity and room temperature (some people feel that even the content of the water used affects the sprouting process). As a result, do not be bound by the exact times listed but rather by the length of the sprouts, being sure to harvest them before they pass their peak.

ADZUKI BEAN. These tiny red-brown beans are not as well known in the Western world as they deserve to be. In the Orient they have been grown for centuries and are often used in dishes for festive occasions. Easy to sprout, they are ready to eat in 4 or 5 days, at a sprouted length of ½ to 1 inch. Use adzuki bean sprouts in any recipe that calls for mung bean, soybean or any other legume sprouts.

ALFALFA. The name for this forage crop is Arabic, meaning "a fine, green fodder" and it derives from the fact that the Arabs discovered their horses grew stronger and more fleet on this crop than on any other. Sprouted for only 1 or 2 days, to a sprout length of 1/8 inch, alfalfa sprouts are particularly good in pastries, cereals and appetizers. If the sprouts are grown 4 or 5 days to about 1 inch and exposed to sunlight for a few hours, which allows them to develop chlorophyll, they make a delicious addition to fresh green salads. Alfalfa is one of the easiest of all seeds to sprout and, while the seed is fairly expensive, the yield is high, so the resulting crop of sprouts is quite reasonable in price.

ALMOND. Unhulled almonds are not easy to find but, if you do locate some in a health or Oriental food store, they are delicious sprouted and used as you would any nut meat. Soak for twice as long as other seeds —about 24 hours, rinse often and keep quite wet. A sprouting time of 3 to 5 days will give you 1/8 to 1/4 inch sprouts, which are just right for use.

BARLEY. This is one of the oldest of all known grains, its origin is lost in man's own prehistoric beginnings. Barley formed a part of the religious rites for many Old World peoples. Once a mainstay in bread making, its use today is largely confined to the brewing of alcoholic beverages and to livestock feed. However, barley sprouts have a fine nut-like flavor that makes them suitable for use anywhere you would use wheat, oats or rice—particularly in breads, soups and casserole dishes. Treat as you would wheat, oats or millet sprouts. Sprouting time is 3 to 5 days; use when sprouted length is no longer than the seed.

BEANS—Black, Broad, Fava, Kidney, Lima, Navy, Pea, Pinto and Red (see also *MUNG BEANS* and *SOYBEANS*). The bean kingdom is one of the most varied in the plant world and beans range in size from limas and kidneys, which are nearly an inch long, to pea beans, no more than 3/8 inch long. Almost every country has some traditional dish made with beans and, by the same token, all have their body of folklore about beans, even to the extent of thinking of them as unlucky. Under most conditions the bean is a prolific producer and the peoples of

South America and the Orient still rely on beans as a staple item of diet. Sprouted beans lose the gas-producing quality of the unsprouted bean and become readily digestible. Each variety of bean sprout has a distinctive taste and all are most adaptable to every kind of use—in appetizers, breads, drinks, main dishes, salads and soup. Most of the bean sprouts listed here are as good raw as they are cooked. Sprouting time for most beans is 3 to 5 days and sprouted length should be ½ to 1½ inches, depending on the bean. A good rule of thumb for beans is "the larger the bean, the shorter the sprout." Larger bean sprouts tend to be tougher and smaller ones more tender, so try different lengths for each bean and select the length and flavor you prefer.

BROCCOLI see *CABBAGE FAMILY*

BRUSSELS SPROUTS see *CABBAGE FAMILY*

BUCKWHEAT. Buckwheat is one of the fastest growing of all grain or cereal crops. For centuries it was used throughout Russia, Manchuria and Europe in bread making. It is less extensively grown in the United States than in the past, which is unfortunate because it is almost totally free of disease or blight. Most of the American crop is used in pancake flours and livestock feed, while buckwheat honey is relished for its distinctive taste and dark color. Buckwheat kernels tend to stick together, so rinse rather than soak them and sprinkle often to keep moist. Sprouting time is rather short—2 to 4 days usually. Some people prefer their buckwheat sprouts no longer than the grain itself—¼ to ½ inch—and others like a sprout ¾ to 1 inch long. Buckwheat sprouts can be used in any recipe that calls for barley, millet, oat, rice or wheat sprouts, e.g., breads, cereals, main dishes and soups.

CABBAGE FAMILY—Broccoli, Brussels sprouts, Cabbage, Cauliflower, Collards and Kale. The cabbage family has almost as many relatives as the bean family. All are easy to sprout and each one produces a tasty sprout of a slightly different flavor. Not everyone likes every kind of sprout from the cabbage family, so experiment with a few seeds at a time. Sprouting time is 3 to 5 days for a sprouted length of ½ to 1 inch. One word of caution, these sprouts tend to become strong flavored or bitter if grown too long, so use them when they are most pleasant to

your taste in soups, salads and main dishes. Like their parent plants, they are high in vitamins and so are well worth sprouting.

CAULIFLOWER see *CABBAGE FAMILY*

CHIA. Chia seeds come from one of the family of sage plants and are not well known outside of Mexico and the American Southwest. Nor are they easy to sprout, being somewhat gluey so that they stick together when moist. However, aficionados rave about the slightly pungent taste they add to salads and sandwich spreads and point to their high trace-mineral content. So, if you are able to locate chia seeds and decide to try them, do so in moderation. But don't try to soak them; they will stick together in an unmanageable mass. Put the seeds on a saucer or small plate, sprinkle with water and let stand overnight. Another way is to put a small amount of water on a plate and float the seeds on top. Sprinkle again as the seeds dry out. Sprouting time is usually 1 or 2 days for 1/8-to 1/4-inch sprouts, which is the best length for most uses.

CHICKPEA. The chickpea, as it is called in the United States, is known by many names elsewhere in the world, garbanzo being one of the most common. The plant is highly drought resistant, which makes it ideal for growing in the subtropics, as well as the drier sections of Europe and North America. Nearly, although not quite, as high in protein as soybean sprouts, chickpea sprouts can be used in any dish that calls for the former. Chickpeas should also be sprouted the same way as soybeans —rinsing about 4 to 6 times in 24 hours because they tend to spoil quickly if left wet for any length of time without rinsing. Sprouting time is generally about 5 to 8 days and sprouted length about ¾ to 1 inch.

CLOVER. The red clover seed is the one you want for sprouting. Handle it the same way as alfalfa and use it in the same kind of recipes; i.e., when the sprouts are just the length of the seed, they are best for appetizers, cereals and breads but when grown to 1-inch length and greened in sunlight use them in salads.

CORN. Untreated corn seed is almost never available, so two possibilities are open to the sprouter. Buy the whole field corn used for animal

feed or raise your own sweet corn and let some of it mature for drying and later sprouting. The latter course will give you the best product. For sprouting, many people prefer the variety of corn known as Deaf Smith County but any sweet corn that you enjoy fresh will be palatable as sprouted corn. Try adding corn sprouts to soups or casseroles. Steam some and serve buttered as a side-dish vegetable. Oven-dried and finely ground corn sprouts may be used to replace part or all of the cornmeal in a quick-bread recipe. The possibilities are limited only by the inventiveness of the cook. Sprouting time can vary from 3 to 8 days, depending on the variety of seed used. Sprouted length should be ½ to 1 inch.

CRESS. A fast-growing plant with a peppery taste, its leaves are most often used in sandwiches or salads. Cress sprouts may be used in the same way but with moderation because of their pungency. Somewhat gluey like chia seeds, cress seeds should be sprouted the same way and harvested when the sprout is about ¾ to 1 inch long, usually after 2 to 4 days.

FENUGREEK. This member of the legume family is almost unknown in the Western hemisphere but in the Far East it is used for seasoning, particularly in curry powder. The seeds sprout readily and in 3 or 4 days will reach ½-inch length, which is just about right to bring out Fenugreek's spicy flavor. Any longer in the sprouting process and the sprouts get bitter tasting.

FLAX. Flax is one of man's most helpful folk remedies for use in poultices and cough syrups, while the fiber is used to make linen. Flax seed is slightly gluey and should be sprouted like chia. Grown to ¾- or 1-inch length—a length which usually takes 3 or 4 days of growing time—flax sprouts make a mild-flavored and delicate addition to salads and soups. If desired, they may be grown somewhat longer and greened in the sunlight for 3 or 4 hours to be used as you would any salad greens.

GARBANZO see *CHICKPEA*

LENTIL. One of the oldest vegetables known to man, lentils are mentioned in the Bible as the food for which Esau sold his birthright to Jacob. There are many different strains of lentil, ranging in color from green to yellow and redish brown. They sprout easily and even those

B2

Cooperative Extension Service
University of Illinois at Urbana-Champaign, College of Agriculture

Horticulture Facts

Growing Sprouts Indoors

James C. Schmidt
Department of Horticulture

VC-13-80
(Rev. 4/84)

Sprouting various kinds of seeds indoors for food purposes is a rather simple process, but one that does require a few minutes of time each day to assure success.

A sprout is the shoot of a germinated seed. Sprouts are a good source of protein, vitamins, and minerals. Sprouts are particularly rich in vitamins B_1, B_2, and C.

The most commonly used means of sprouting seeds is the "rinse and drain" method. In addition to the seeds, you need a glass jar and some cheesecloth. (A wide-mouth canning jar with a screw-top ring is ideal.) The seeds often used for sprouting include those of the mung bean, soybean, lentil, and alfalfa. When buying seeds for this purpose, get only those that are sold expressly for use in sprouting. Be sure they have not been treated with a fungicide or with any other material. Health food stores and the gourmet departments in supermarkets usually stock such seeds.

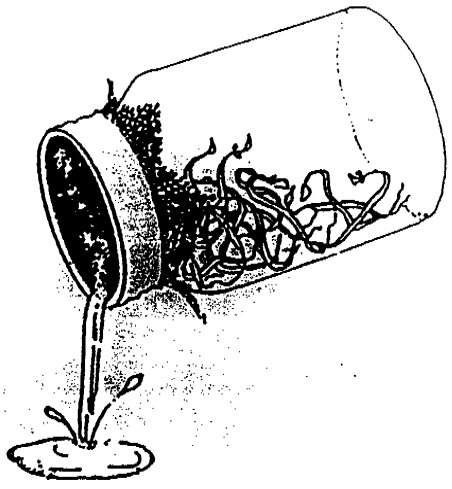

Figure 1

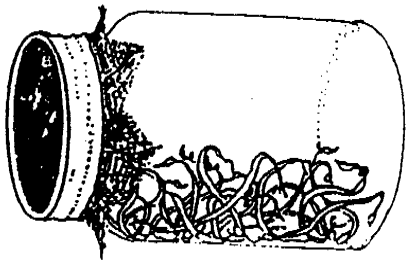

Figure 2

Sprouting the seeds is a 5-step process:

1. Prepare your sprouting jar by cleaning it thoroughly. Cover the bottom with 1/2 to 1 inch of seeds. Cover the mouth of the jar with a piece of cheesecloth. Secure it with a rubber band or a screw-top ring.
2. Rinse the seeds with cold water and drain them. The cheesecloth will keep the seeds in the jar as you pour off the water (Figure 1).
3. Soak the seeds in lukewarm water for 12 to 16 hours. The volume of water in the jar should be twice that occupied by the seeds.
4. Drain off the water. Then rinse the seeds with lukewarm water and drain them thoroughly.
5. Place the jar on its side to distribute the seeds evenly (Figure 2). Keep the jar in a dark place at room temperature (68° to 72°F is ideal).

Some people grow sprouts in the light. However, this allows them to turn green and possibly become tough and bitter.

Continue to rinse the seeds 2 to 4 times a day until the sprouts are the desired length, usually 2 to 5 days. Always be sure to drain off all excess water. Otherwise, the seeds will ferment and spoil.

The sprouts will be ready within a few days. Wash them thoroughly to remove the seed husks. Sprouts can be used in salads and on sandwiches, stir-fried, or cooked in vegetable dishes, soups, stews, and casseroles. Unused sprouts may be kept in a sealed bag or jar in the refrigerator for 1 to 2 weeks.

To freeze sprouts, blanch them over vigorous steam for 3 minutes, then cool quickly in ice water, drain, and pack the sprouts into containers that can be sealed.

Drawings by Floyd A. Giles, Department of Horticulture

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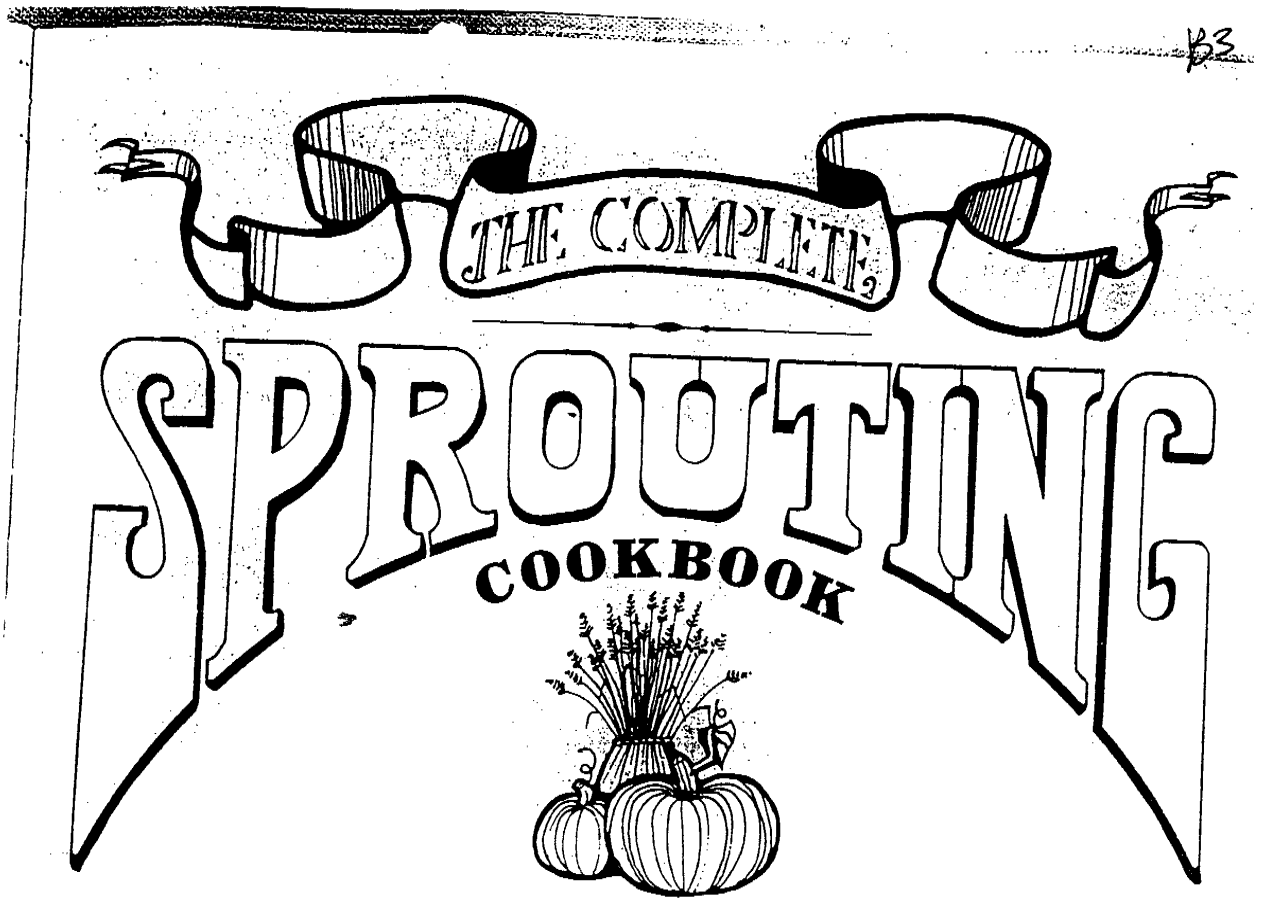
Sprouters' Guide--a list of suggested seeds that you can sprout and information regarding methods, yield, and use.

Seed	Desired sprout length	Average sprouting time	Sprout yield (for desired lengths) seeds used	sprouts obtained	Proper sprouting method	Can be eaten raw	Averag cookin time
Adzuki	1/2 to 1 inch	4 to 5 days	1/4 cup	1 cup	Soak and rinse	Yes	8 to 12 mi
Alfalfa	Seed length	1 to 2 days	1 cup	2 1/2 cups	Soak and rinse	Yes	3 to 5 min
Barley	Seed length	3 to 5 days	1/2 cup	1 cup	Soak and rinse		8 to 10 mi
Bean	1/2 to 1 1/2 inches	3 to 5 days	1/4 cup	1 1/4 cups	Soak and rinse	Yes	8 to 15 mi
Buckwheat	Seed length	2 to 4 days	1 cup	2 1/2 cups	Rinse and sprinkle only		8 to 15 mi
Cabbage, broccoli, Brussels sprout, cauliflower, and kale	1/2 to 1 inch	3 to 5 days	1/4 cup	1 1/4 cups	Soak and rinse	Yes	3 to 8 min
Chia	1/8 to 1/2 inch	1 to 2 days	1/4 cup	1 cup	Sprinkle only	Yes	
Chickpea or garbanzo	3/4 to 1 inch	5 to 8 days	1 cup	3 1/2 cups	Soak and rinse 4 to 6 times a day	~~Yes~~ No	10 to 20 m
Cress	3/4 to 1 inch	2 to 4 days	1 tbsp.	3/4 cup	Sprinkle only	Yes	
Fenugreek	1/2 inch	3 to 4 days	1/4 cup	1 cup	Soak and rinse	Yes	2 to 4 min
Lentil	1/4 to 1/2 inch	3 to 4 days	1 cup	2 cups	Soak and rinse		3 to 8 min
Millet	Seed length	3 to 5 days	1 cup	2 1/2 cups	Soak and rinse		8 to 10 mi
Mung bean	1/2 to 3 inches	3 to 8 days	1 cup	4 cups	Soak and rinse	Yes	2 to 5 min
Oat	Seed length	3 to 5 days	1 cup	2 1/2 cups	Sprinkle only		8 to 10 mi
Pea	1/4 to 1/2 inch	3 to 4 days	1 cup	2 cups	Soak and rinse		3 to 8 minu
Radish	1/2 to 1 inch	2 to 4 days	1 tbsp.	3/4 cup	Soak and rinse	Yes	
Rice	Seed length	3 to 4 days	1 cup	2 1/2 cups	Soak and rinse		8 to 10 min
Rye	Seed length	3 to 5 days	1 cup	2 1/2 cups	Soak and rinse	Yes	3 to 5 minu
Sesame	Budded only	2 to 3 days	1/4 cup	1/3 cup	Soak and rinse		Oven roast
Soybean	3/4 to 1 inch	4 to 6 days	1 cup	3 1/2 cups	Soak and rinse 4 to 6 times a day	Yes	10 to 20 mi
Sunflower	Budded only	5 to 8 days	1 cup	2 cups	Soak and rinse		Oven roast
Triticale	Seed length	1 to 3 days	1 cup	3 cups	Soak and rinse	Yes	8 to 10 min
Wheat	Seed length	4 to 5 days	1 cup	4 cups	Soak and rinse	Yes	8 to 10 min

3-E14



Karen Cross Whyte

ILLUSTRATED BY RICHARD STORTROEN

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B3

For Malcolm

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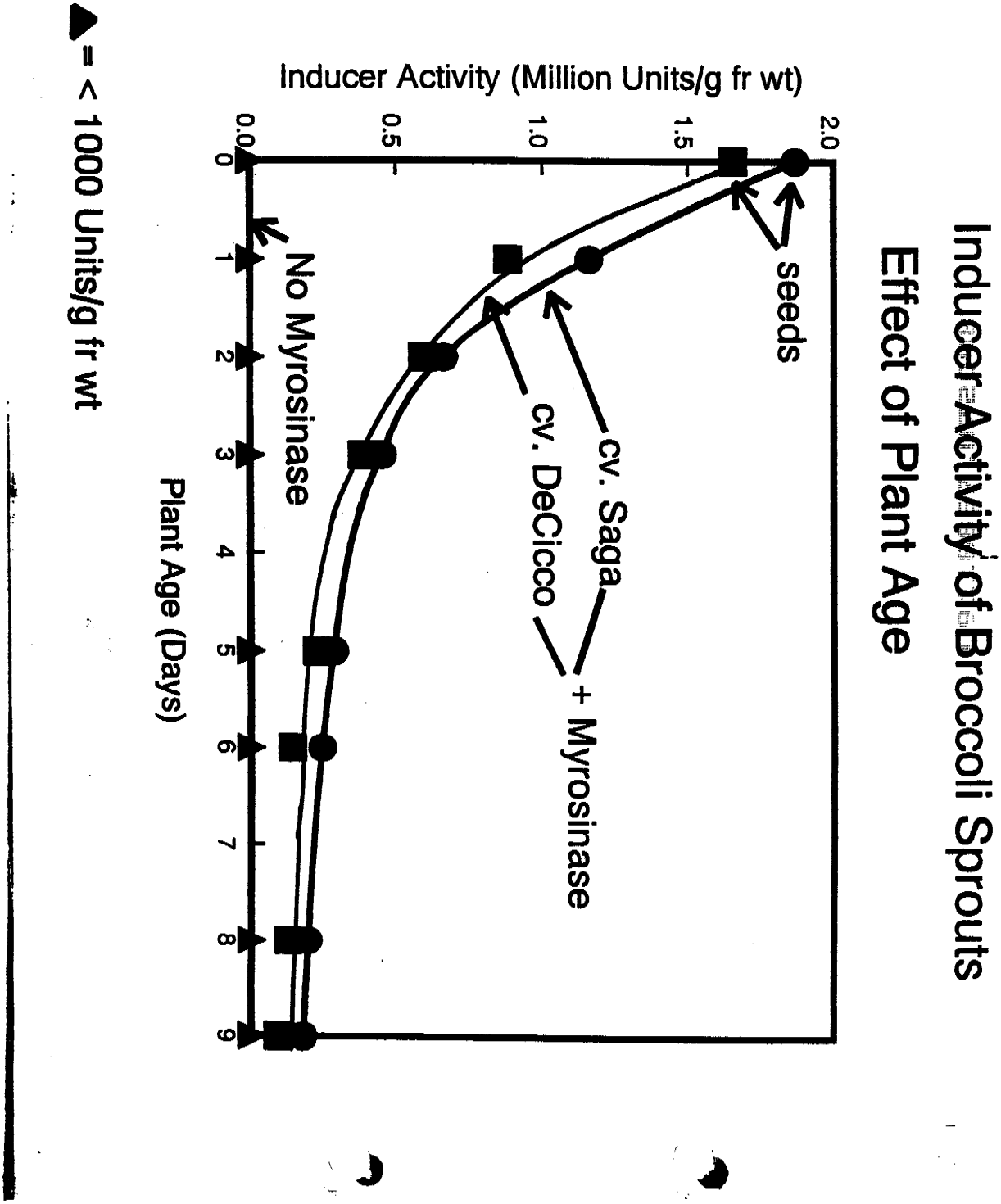
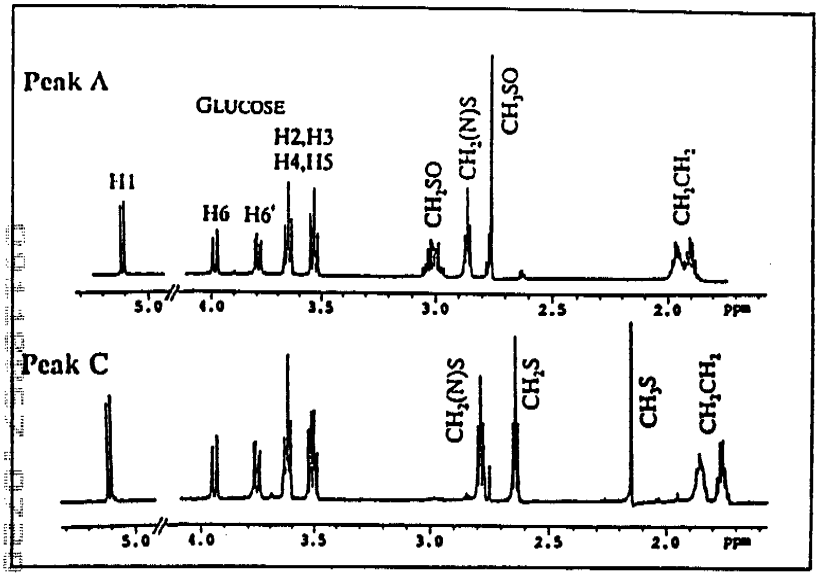
Figure 1


Inducer Activity of Broccoli Sprouts
Effect of Plant Age
Inducer Activity (Million Units/g fr wt)
0.0
0.5
1.0
1.5
2.0
0
1
2
3
4
5
6
7
8
9
Plant Age (Days)
No Myrosinase
+ Myrosinase
seeds
cv. Saga
cv. DeCicco
▶ = < 1000 Units/g fr wt



High Resolution NMR (600 MHz) in D_2O. Note: chirality of SO in Peak A induces multiplet for CH_2SO (Peak A), not observed for CH_2S (Peak C).

Figure 2

SPROUT IT!

One Week From Seed to Salad

by Steve Meyerowitz

A Complete Guide to
Growing Your Own Food Indoors,
from Stored Grains, Beans,
Nuts and Vegetable Seeds

Illustrations by Michael Parman

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Great Barrington, Massachusetts

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God Bless
Ann Wigmore and Viktoras Kulvinskas,
Prophets of Health and Spirit,
Whose Teachings
Have Given Birth
to a
New Generation of
Healers

Of course, you can eat these sprouts before they mature, but you would be losing a lot. The popularity of sprouts is based on their reputation as nutritional superfoods. But this is not the case if they are not fully mature! Their nutritional peak usually occurs at the time of their first leaf division. Many restaurants serve a salad full of brown and yellow sprouts. The brown parts are the hulls which have not fallen off yet and the yellow represents the lack of full chlorophyll development. Simply speaking, you are not getting what you are supposed to. Not only that, certain undesirable factors remain present within the seed until the plant fully develops *(see p. 113)*. Once you grow a delicious crop of mature green sprouts, you will never eat them any other way. Eating immature sprouts shortchanges you in total yield as well as nutrition. Patience pays.

What Seeds To Sprout

Your sprouter is ideal for growing indoor vegetable seeds that develop chlorophyll--rich, green leaves. These include:

Alfalfa	Garlic	China Red Pea
Clover	Onion	Turnip
Fenugreek	Mustard	Cabbage
Radish	Buckwheat	Broccoli
Kale	Sunflower	Chia

Which Seeds - Which Size - How Much

6" 2-3 Tbsp	*8" 5 Tbsp*	*9" 6-7 Tbsp*
Radish	Alfalfa	Buckwheat
Garlic	Clover	Sunflower
Onion	Fenugreek	China Red Pea
Cabbage		
Kale		
Turnip		
Chia		
Mustard		

6 INCH BASKET, 2 - 3 TABLESPOONS SEED

These varieties are hot and/or spicy. Use the smallest 6 inch basket for them unless you have a spicy appetite. Use 2-3 tablespoons of seed. Garlic, Onion, Radish, Cabbage, Turnip, Kale, Broccoli, Mustard, Canola, Chia. Garlic and onion are delicious and very hearty. Mustard is hot. Cabbage, turnip, kale, broccoli and canola are all cabbage family. Chia is a gelatinous seed *(see p. 157)*.

8 INCH BASKET, 5 TABLESPOONS SEED

Alfalfa, Clover and Fenugreek. Clover is a spicy cousin of alfalfa with bigger leaves. Fenugreek is a bitter herb and very healthy for the respiratory system. Use it mixed with alfalfa for best taste. 5 Tbsp can yield one pound of salad greens.

9 INCH BASKET, 6 - 7 TABLESPOONS SEED

Buckwheat, Black Skin Sunflower, China Red Pea. These three seeds represent the largest leaves and tallest stalks of the sprouting family. Mung beans may also be grown this way even though they are not a salad green. Choose only *whole* buckwheat and sunflower *in-the-shell*.

Double Decker Technique

Stack Your Sprouters! Since space is often a problem, here's a technique to conserve it. Two sprouting baskets on top of each other take up less space than two side by side. During the first phase of germination (days 1-4), any two of the sprouters could be stacked with the smaller basket underneath the bigger one. Insert the double decker into the greenhouse.

It's a great space saver, but that's not all. Seeds send their roots vertically downward searching for soil. The extra height of the double decker gives the roots from the top basket plenty of room to stretch. Ordinarily, they are matted underneath the basket by the floor of the greenhouse tent. Elevating the basket gives the roots space to breathe and has the potential to increase the length of the stalks.

Radish. Watch out. This is a hot one and can bite! Respect your radish and it will provide many happy meals for you. Takes 5-6 days to mature. Shells fall off easily. A white fur is common to see growing during early growth. This indicates watering is not adequate either in terms of pressure, volume or frequency. The white fur is harmless and easily rinsed away. Don't let it go too far or it could lead to mold. China Rose Radish is the best sprouting variety. It has beautiful colored leaves and red stalks. Radish will clear clogged sinuses and chest. Great to mix with milder varieties. Basket method.

Cabbage. A little guy with a light green complexion and a notch at the top of the head. Takes 5 days to mature. Because of its small size, Cabbage finds it more difficult to root into the basket weaves than other sprouts. Try not to disturb the seeds' orientation during days 2-4. This is the critical period when it attempts to root. Once they root, they are rather tight fisted and unlike the others, need to be yanked out in lumps. Lots of seeds remain on the bottom. The seed jackets can mold, so rinse them out and rinse the harvested sprouts as well. Basket method.

Turnip, rutabaga, kale, and *rapeseed* are exotic members of the cabbage family. *Black mustard* looks like the cabbage family but is much hotter. These are delicious sprouts especially if you like cabbage, but they are hard to find. 5-6 days maturity. Basket method.

Alfalfa. The most famous sprout and a celebrity to whom all others owe a debt of gratitude. Alfalfa gets its name from the Arabic "alf-al-fa," father of all foods. One of the richest sources of chlorophyll and magnesium as witnessed by its dark green color. Mild tasting. It holds on to its seed jackets tightly and matures in 7 days when 90% of them have fallen. Rinsing in the inverted position *(see p. 17)* successfully eliminates most hulls. Sensitive to hot temperatures and direct sunshine. Alfalfa will decay if it gets too hot indicated by a softening (mushiness) of the stalk and an ammonia smell. Avoid this during hot weather by rinsing more often and with cold water. Keep in a shady spot. Basket method.

Red Clover. A cousin of alfalfa, considers itself the prettiest of all sprouts and whether or not you agree, it is certainly one of the fastest and easiest to grow. It matures in only 6 days. Although it is not quite as tall as Alfalfa, it has a sharper flavor, a larger leaf, and a lighter green complexion. It surrenders its hulls easily making it the simplest of sprouts to clean. Don't miss this grand lady. Basket method.

Crimson Clover. There are many kinds of clover but crimson has the largest leaf. A cousin of alfalfa, it has all the same characteristics especially regarding hot temperature. It is even more sensitive to heat than alfalfa. It relieves its seed jackets or hulls readily--more than any other seed, providing a clean, green salad free of hulls. This clover is related to the famous 4-leaf clover and other clovers blooming on your lawn in the spring. Basket method.

Buckwheat. Buckwheat is actually not a wheat at all but an herb, which is good news to those of you with wheat allergies. It is quite big--4-5 inches tall and rich in B-vitamin factors like choline and inositol. Buckwheat takes approximately 10 days to mature and is ready when 90% of its hulls have fallen off. You'll never get 100% hull removal so don't try because the seeds ripen at different rates. Harvest by yanking out a 1 inch handful and either washing or cutting off the hulls at the roots. Because the hulls are so large, they can develop fungus. Take special care washing the buckwheat seeds during the rooting stage (first 5-6 days). Good thorough washing of the seeds and the baskets eliminates mold. Buckwheat needs light, warmth and moisture in order to maximize hull drop-off. Basket method. *(For more on buckwheat see p. 146.)*

Garlic & Onion Chives. The healthiest form of these vegetables is the young plant. These healing foods are easier to digest and rich in chlorophyll at this early stage of their development and they possess all the mysterious cell factors that make these foods famous in folklore and herbal medicine. Chlorophyll neutralizes the famous odor. The young chives take 14 days to mature. The black seed jackets hang on tenaciously. Surrender to them, they are okay

Fenugreek

Trigonella foenum graecum

Fenugreek is actually a member of the legume (leguminosae) family. It is a cousin of clover and lucerne (alfalfa). The Pharaohs of Egypt used it in religious ceremonies. The monks of the Middle Ages grew it to treat blood poisoning, failing eyesight, fevers, palpitations and liver and kidney troubles. It is widely cultivated in Arab countries where it was traditionally used to stimulate appetite. Its chemical composition resembles that of cod-liver oil and is considered a 'sister herb' to garlic, enhancing that herb's disinfectant properties [54]. It is a tonic because it is so rich in many minerals including iron and sulfur and vitamin E. It 'feeds' the blood and is recommended for ailments that are associated with weakness such as anemia and infections. Both the seed and the whole plant are used.

Fenugreek is a demulcent meaning it is soothing to the mucous membranes and reduces inflammations. A tea made from the seed is used as a gargle and for sore throats. It also acts as an expectorant, clearing the mucosa of the chest and respiratory system. Byzantium mothers used it to increase their milk supply. Poultices made from the stalk and leaves have been used on wounds, boils, sores and tumors. The seed contains beneficial volatile oils and steroidal saponins which may be used to regulate blood cholesterol. Fenugreek sprouts have both the properties of the seed as well as the plant. This sprout should be used to stimulate and to fortify.

Nutrition in Fenugreek Seed

(in Milligrams per 100 grams) [30]

Protein	23.0	Zinc	2.50
Calories	323.0	Niacin	1.64
Calcium	176.0	Iron	33.53
Total fat	6.4	Arginine	2.47
Magnesium	191.0	Leucine	1.76
Phosphorus	296.0	Lysine	1.68
Potassium	770.0	Aspartic acid	2.71
Sodium	67.0	Glutamic acid	3.99

Cabbage

Brassica oleracea

The cabbage family of foods includes Chinese cabbage, broccoli, kale, turnip, rutabaga, radish, mustard, rape, cauliflower, collard greens, brussel sprouts and kohlrabi. Of these, the first eight are good for home sprouting. Cabbage is rich in fiber and a good source of minerals especially potassium 253mg per 100 grams, sulfur 1710mg and vitamins C 47mg, E and A 200 IU. It has a drying and binding faculty that makes it effective for inflammations and hot swellings. Historically, cabbage was used to combat scurvy at sea even by the famous Captain Cook. Sailors would make sauerkraut from it which coated their intestinal tract with friendly bacteria and promoted regularity. The fermentation from the kraut remedied the complaints of flatulence that are common with the cabbage family. It is also improved by boiling and draining. European literature often mentions cabbage juice as the best medicine for hangovers. Philip Moore in the *Hope of Health* in 1564 wrote, "the juice of cabbage purges the head, being put into the nostules. Being taken after much drinking, it withstandeth drunkenness."

The cabbage family and other cruciferous vegetables are now taken seriously at the National Cancer Institute. Worldwide epidemiological studies consistently point to lower than average cancer rates for those groups regularly eating dark green leafy vegetables. The crucifers contain compounds called glucosinolates which block the development of cancer. Turnip greens contain between 39 and 166 milligrams per hundred grams of glucosinolates. When cooked, the concentration drops to a range of 21-94 [46].

Cabbage has the greatest potential in colon and stomach cancer. Several major epidemiological studies demonstrate that eaters of leafy green crucifers have the lowest rate of colon cancer. Other population surveys add cancers of the prostate, rectum, esophagus, lung and bladder to the list. In May 1978, Lee Wattenberg, M.D., a professor of pathology at the University of Minnesota Medical school, reported in the journal *Cancer Research*, that he had isolated chemicals called indoles from cruciferous vegetables which were potent

antidotes to development of cancer. Without the indoles, 91% of his rats developed tumors. With the indoles, only 21% succumbed. Subsequently, other important anti-cancer and detoxification compounds were found in cabbage. Dithiolthiones in cabbage cause the body to release glutathiones, a natural body enzyme. Glutathiones neutralize or detoxify carcinogens before they damage the DNA. The greater the supply of glutathione, the greater the protection against cancer. Another anti-cancer compound, sulphoraphane, stimulates the cell's production of quinone reductase, an enzyme that blocks tumor growth. *(See p. 121.)*

Cancer starts because DNA, the cellular genetic material, is damaged by a carcinogen. This could be a pollutant from air or water, cigarette smoke, pesticides, ionizing radiation, free radicals, etc. The mutated cells then start to divide abnormally. Consistent, low level doses of anti-cancer enzymes found in foods like cabbage, enhance the body's biological barriers to the cancer development. These enzymes are proving to be our natural artillery in the cellular battle to protect the good cells from going cancerous in the presence of carcinogens. The consumption of sprouts from the cabbage family is the best source of these enzymes because enzymes abound during the rapid growth period of germination.

Radish

Raphanus sativus, cruciferae

Radish belongs to the crucifer family and is thus a cousin of cabbage, turnip and mustard. Many of the medicinal properties of the crucifers apply to radish as well. The ribbons of red in the colorful leaves of this sprout properly telegraph the palatery inferno awaiting the unwary gourmet. Radish sprouts actually produce more BTU's of heat than the mature radish bulb. The sprouts are definitely expectorants. They clear mucous from the respiratory tract and thus are wonderful for such ailments as colds, sinus congestion, bronchitis, whooping cough and for the long term improvement of asthma. Seeds can be used in plasters like mustard. Poultices made from the seeds or ground up sprouts may be placed over various parts of the body with benefit. They relieve chest congestion when placed on the chest in a plaster, poultice or salve and help rheumatism when placed over the shoulders, wrists and knees. Foot baths made from ground seeds or blended sprouts relieve head congestion.

Radish is wonderful for the entire intestinal tract from the nose to the anus. Its heat producing action stimulates the elimination of excess mucous and thus starts a cleansing process which can include expelling worms. (Intestinal flora like it.) It is anti-putrefactive and antiseptic. Too much radish, however, will induce vomiting (emetic). Small amounts, on the other hand, stimulate appetite. Sprouted radish is excellent nourishment during cold weather. It is an effective diuretic and restorative for troubles of the urinary tract, bladder and kidneys.

Mustard

Brassica nigra

Sprouters prefer black mustard because yellow mustard is a gelatinous seed and harder to germinate. In herbal tradition, mustard was used as a plaster, a stimulant and an emetic (encourage vomiting). Put into a foot bath, the ground seeds will draw the blood from the head and lungs thus relieving headache and congestion. Its main use is as an external stimulant. Its rubefacient action causes mild irritation to the skin, but stimulates the circulation and relieves muscular pain. For chest congestion and bronchitis, blend mustard seeds or sprouts into a poultice and place on chest. A drink of the blended sprouts or seeds stimulates perspiration (diaphoretic) which is ideal for reducing fevers and remedying colds and flu. To induce vomiting, simply drink copious amounts of tea made from steeping the seeds in hot water. To make plasters, mix 1 part of mustard meal with 4 parts of flour.

Sunflower

Helianthus annus

The sunflower is 3,000 years old and is so named because its golden rayed flowers are reminiscent of the sun. It is heliotropic, meaning it follows and faces the sun from morning to night. Extensive root systems extract many trace minerals not always present in

Common black pepper contains nearly 10% (by weight) piperine, Piperine is related to safrole which causes cancer in mice. Should we therefore deduce that black pepper, a condiment on nearly every dining table in America, causes cancer in humans? Aflatoxin is one of the most potent carcinogens known and just hearing its name is alarming to the public. It can be a contaminant in moldy bread, cheese, corn, peanuts and fruit, but it is extremely rare. Nitrosamines and nitroso compounds are suspected causes of stomach and digestive tract cancers. Beets, celery, lettuce, spinach, radish and rhubarb all contain 200 milligrams or more of nitrates (per 100 gram portion). Should we incriminate these common vegetables, consumed for thousands of years across multi-national and cultural borders because chemical components isolated within them have demonstrated mutagenic effects on rats?

Anti-Oxidants & Anti-Carcinogens

All right. Nature is not benign. Natural toxins do exist. But natural foods and particularly sprouts, also contain numerous beneficial enzymes, anti-oxidants and anti-carcinogens such as vitamin E, beta-carotene, selenium, super-oxide dismutase and ascorbic acid (vitamin C) that act as the body's defense mechanism against toxins whether natural or man-made.

Beta-Carotene is found in mature alfalfa sprouts and in all plants that contain chlorophyll. It is a very efficient free radical trap [17] and has demonstrated anti-carcinogenic activity in rats and mice [18]. Selenium significantly inhibits skin, liver, colon, and mammary tumors in experimental animals by a variety of carcinogens [19]. Glutathiones, rich in foods containing the sulfur amino acids, are major anti-oxidants and anti-mutagens and may even be effective against potent aflatoxins [20]. Vitamin C (ascorbic acid) was shown to be anti-carcinogenic in rodents treated with ultraviolet radiation and nitrite. Mushrooms like shitake contain the active polysaccharide compound lentinan. Lentinan stimulates interferon production. Interferon is a powerful anti-tumor agent [27].

☞ ☞ ☞ We know that "free radicals" are the guilty party because chromosome breaks created in the presence of L-Canavanine sulfate were prevented by the anti-oxidant superoxide dismutase [16]. ☜ ☜ ☜

Raw and sprouted vegetables contain enzymes that oppose tumor growth. Tumors release enzymes called proteases which break down healthy tissue around the tumor and increase potential tumor growth. Inhibiting enzymes in live foods called protease inhibitors, block the actions of these proteases and the spread of the tumors. Sprouted seeds and beans, particularly soybeans and lima beans, are our finest dietary sources of these protective enzymes [23].

Flaxseeds and their young sprouts are one of our best dietary sources of the essential omega-3 fatty acids such as alpha-linolenic acid. Freshly sprouted 1-2 day flaxseeds provide an excellent source of this extremely unstable oil. Studies show that the omega fatty acids have an inhibiting effect on tumor growth [24]. Specifically, they decrease the synthesis of prostaglandins thus decreasing the migratory ability of tumor cells and metastasis [25].

Sprouts also show promise to help in the fight against breast cancer. Soybean sprouts are nature's finest source of plant isoflavones which are converted in our stomachs to isoflavone equol. High estrogen levels stimulate breast tumor growth, but research shows isoflavone equol to have excellent anti-estrogenic qualities similar to that of cruciferous vegetables [26].

In 1992, researchers at Johns Hopkins University Medical school isolated sulphoraphane, a compound found in broccoli and other brassica family vegetables. Sulphoraphane stimulates a cell's production of certain protective enzymes that resist tumor growth [9]. Studies of cancer patterns in the U.S. and abroad reveal strong statistical linkage between the consumption of raw vegetables and relative immunity to a variety of cancers. Researchers have long known that cells exposed to carcinogens respond by generating an assortment of highly effective enzymes that guard against malignant growth. They

appear to work by bonding with the toxins and preventing their chemicals from reaching the cell's vulnerable genetic material. Then, they flush them from the body. The most effective enzyme stimulated by the sulphoraphane in cabbage family foods is called quinone reductase. Sulphoraphane, by the way, is related to mustard oil. Foods that contain sulphoraphane are cabbage, broccoli, kale, cauliflower, turnip, Chinese cabbage, collard greens, brussel sprouts and even non-cruciferous vegetables like carrots, green onions, chives and the sprouts of broccoli, kale, turnip, garlic, onion and Chinese cabbage.

Chlorophyll, one of the most basic nutritional elements in plants, is a well known blood purifier and, in fact, is similar in chemical structure to human hemoglobin. Numerous animal studies demonstrate that chlorophyll can be converted into hemoglobin. Alfalfa sprouts are one of our best dietary sources of earth grown chlorophyll. (Algae from lakes is highest.)

Alfalfa sprouts have also demonstrated a remarkable cholesterol reducing capacity. Studies in both humans and a wide selection of animals including dogs, rabbits, chickens, pigeons and pigs have shown a regression of atherosclerosis [40] and a considerable drop in the levels of serum cholesterol. Saponins in alfalfa appear to be responsible for lowering cholesterol and balancing the bile [41]. They create a sudsing action that prevents cholesterol and bile salts from being absorbed. Although there has been concern in the past about the toxicity of saponins, research showed positive results in the lack of toxicity of alfalfa saponins in monkeys and rats [42].

Enzymes are protein-like chemical agents that facilitate all life-building processes such as digestion, absorption and metabolism. The enzyme and anti-oxidant super-oxide dismutase, abundant in sprouts especially green sprouts like alfalfa, obstructs the free radical-canavanine-alfalfa pathology. In a 1980 report published in *Human Genetics*, chromosome breaks caused by free radicals were prevented by the anti-oxidant super-oxide dismutase [16]. In a 1993 study at the Indiana University School of Medicine, 78 female mice

received a lethal dose of 580 rads of x-radiation designed to cause extreme free-radical activity. Half of the 23 placebo-fed mice died within 30 days. The remaining 55 mice were fed supplements made from wheat sprouts. All of them survived except one. Wheat sprouts are high in the pre-cursor enzyme that stimulates the body's manufacture of super-oxide dismutase [35].

Wheat sprouts have also demonstrated anti-mutagenic activity in mice and rats in three separate studies. Members of the flavonoid family, shaftoside and swertisine, both glycosides of apigenin appear responsible for the wheat sprouts' strong anti-mutagenic behavior [38]. The sprouts were not grown to the grass or green stage.

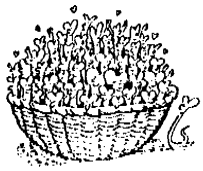
Perhaps because of their rapid germination and protein manufacture, sprouts are also rich sources of nucleic acids. Nucleic acids are the genetic keys to protein and tissue growth found in the cytoplasm, nucleus and chromosomes of cells. They resist cell mutation and promote healthy cell growth. These results indicate that sprouts have a profound effect on our ability to fend off free-radical induced diseases such as cancer and immune system disorders.

Now for the Real Carcinogens

Rather than isolating and attacking natural toxins in plants which are balanced by a multitude of enzymes and nutrients, perhaps we should turn our efforts to eliminating known carcinogens in our environment. Free oxygen radicals are caused by numerous dietary and lifestyle factors including medical drugs, air and water pollution, pesticides, alcohol, cigarettes, fried foods, smoked and barbecued foods, nitrates, even good old toast and coffee.

Charred meats and rancid fats should not be part of anyone's diet. The heating of proteins and fats creates a variety of DNA damaging agents [22]. So does the carmelization of sugars and amino acids visible on the browned ends and crust of common toasted bread. In fact, the amount of burnt and browned material in the human diet may be several grams per day. In comparison, a 2 pack-

SPROUT ORDER FORM 413-528-5200

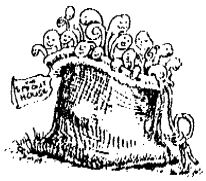


INDOOR VEGETABLE KIT

☐ 1 @ $24.95

LIQUID KELP FERTILIZER

☐ 8 oz dispenser bottle $4.95



THE FLAX SPROUT BAG

☐ 1 @ $12.95, ☐ 2 @ $23.95, ☐ 3 @ $33.95

Sproutman's Organic Sprouting Seeds

Fill in the number of units you wish to order.

_____ Garlic Chives	@$4.95 4oz.	_____ Chinese Cabbage	@$5.95 lb
_____ Alaska Green Pea	@$2.50 lb	_____ Red Pea Lettuce	@$2.95 lb
_____ French Mini-Lentil	@$2.50 lb	_____ Mung Bean	@$2.25 lb
_____ Gold Fenugreek	@$5.95 lb	_____ Hard Red Wheat	@$1.15 lb
_____ Buckwheat Lettuce	@$2.75 lb	_____ Soft White Wheat	@$1.45 lb
_____ Red Clover	@$5.95 lb	_____ Radish Rose	@$5.95 lb
_____ Black Sunflower	@$5.95 lb	_____ Kamut Wheat	@$2.50 lb
_____ Jumbo Alfalfa	@$4.95 lb	_____ 50 lb Bag Wheat	@$39.95

B O O K S

☐ *Sprout It! One Week from Seed to Salad*	$10.95	☐ Round Greenhouse	2 for $9.95
☐ *Juice Fasting & Detoxification* @	$8.95	☐ 20x15 Greenhouse	@ $9.95
☐ *Wheatgrass Natures Finest Medicine* @	$5.95	☐ 12 Jars full of our Best Seeds	$39.95
☐ *Food Combining & Digestion* @	$7.95	*(8oz - 14oz per jar)*	
☐ *Recipes from the Sproutman* @ $12.95 *Due Winter '93*			

AUDIO TAPES $9.00ea

☐ Juice Fasting I	☐ Food Combining	☐ Purifying Water
☐ Juice Fasting II	☐ Vegetarianism	☐ Indoor Gardening
	☐ Wheatgrass	☐ Making Sprout Bread

SHIPPING + TOTALS

If your order amount is:

$25-50 add $5.95
$51-75 add $7.95
$76-100 add $9.75
$101+ add $11.75

Subtotal _____
Mass Tax _____
Shpg _____
TOTAL _____

Continental USA only. Higher rates apply for Alaska, Hawaii, PR, USVI. Canadian orders use MC or VISA only. Mass. residents only add 5% sales tax.

Minimum order $25. Mass residents add 5% sales tax.
☐ MC ☐ VISA ☐ Check. Signature _____

CARD # _____ EXP____

NAME _____
ADDRESS _____
CITY _____ STATE ____ ZIP ____
TEL # (day) _____ FAX # _____
Prices subject to change. 8/1/93.

THE SPROUT HOUSE PO BOX 1100 GREAT BARRINGTON, MA 01230 413-528-5200